

# Sandians Recognized for Outstanding Contributions

Nine Sandia employees received 1986 DOE Weapon Recognition for Excellence Awards from the Office of Military Application recently. The Albuquerqueans' awards were presented by Major General Ken Withers, Jr., Director of Military Application, during a ceremony at the Technology Transfer Center on April 2. The Sandia Livermore employee's award will be presented on April 14 in Livermore.

The awards, presented to a limited number of recipients each year, recognize outstanding contributions to the U.S. nuclear weapons program, and are one of DOE's highest honors.

Sandians who received excellence awards are:

**GUS SIMMONS (1640)**, for work resulting in contributions to nuclear weapon command and control.

In 1964 Gus set up the first "black hat" group charged with the mission of figuring out ways to defeat PAL (Prescribed Action Link) devices — security locks for weapons — and uncovering weaknesses in the PAL code management system. Later he applied PAL tamper-sensing container technology to the protection of sensitive information such as cryptographic keys or PAL combinations. This work led to the development of several other programs designed to protect codes and cryptographic variables.

After he was named manager of the Applied Mathematics Department in 1972, Gus began an

(Continued on Page Six)

## It's Sandia BONDfire Time

### Move Over, Numero Uno!



### Sandia BONDfire

You're going to see a lot of posters and logos urging you to put the heat on Number 1!"

What's this about Number 1? "Sandians obviously realize the many advantages that bonds have to offer," Jim continues. "Last year we finished the campaign at 96.7 percent participation. That placed us fifth on the honor roll of U.S. corporate leaders, up from eighth.

"This year we're going for Number 1, and I think we really can do it, given the tremendous support we get from Sandians at every one of our locations — Albuquerque, Livermore, Tonopah, and Pantex."

The campaign will be conducted much like last year's very successful campaign. ("We subscribe to the old maxim: 'If it ain't broke, don't fix it,'" says Jim.) VP coordinators will conduct the drive in their organizations with the help of directorate coordinators and canvassers.

All employees will receive a payroll deduction card along with information detailing the advantages of bond investment.

And the advantages are many. In addition to the traditional pluses of exemption from state and local taxes, deferral of federal tax until bonds

Sandia's 1986 U.S. Savings Bond Drive is scheduled April 21 through May 2. "Investors consider Savings Bonds a hot buy this year," says Jim Ney, manager of Nuclear Safety Department 7230 and chairman of the Savings Bond Committee. "And because they are such a hot buy, we've decided to go with a 'Sandia BONDfire' theme for this year's drive.



PRESIDENT WELBER greeted Major General Ken Withers, Jr., Director of Military Application, DOE, at the Technology Transfer Center last week before General Withers presented DOE Weapon Recognition for Excellence Awards to eight SNLA recipients. (More on Page Six.)

**LAB NEWS**

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are cashed, and plain old patriotism, bonds' competitive interest rates are attracting investors who might have been drawn to money market funds or CDs a few years back.

"Interest rates are falling fast, but not for bond investors. The current 8.36 percent rate is getting lots of attention. Ever since the Savings Bond program overhaul in 1982, more and more people have recognized that bonds are a good deal," says Jim. "And lately, because of those



JIM NEY (7230), head of Sandia's 1986 U.S. Savings Bond campaign, urges all employees "to stoke that Sandia BONDfire all through the campaign [scheduled April 21 through May 2]." We see he looks very determined — note the rolled up sleeves!

falling interest rates, what really gets their attention is the 7.5 percent guarantee on bonds if they're held five years.

"I recently read [in *Barron's*] that the chairman of the Council of Economic Advisors predicts that, by 1991, T-bill rates will be down to four percent and 10-year Treasuries will be yielding four and a half percent. If that really happens, the 7.5 floor under Savings Bonds will make today's bond buyers look like financial geniuses in retrospect!"

(Since the bond program was revamped in 1982 to make them more competitive, bonds pay a floating rate set every May and November at 85 percent of the average market rates on five-year Treasury securities during the previous six months, but no less than 7.5 percent if they're held at least five years.)

"Not only do we hope to see Sandia come out at the top of the participation list this year," continues Jim, "we also would like everybody to take a good long look at his or her level of participation. Given the interest returns now available on bonds and their virtually risk-free nature, this might be a good time to consider an increase in that monthly deduction. Payroll deductions make the savings automatic — a painless way to build a nest egg."

Jim points out that Savings Bonds have always offered particular advantages for retirement savings. "And bonds are also an excellent way to save for children's college expenses down the road," he says. "Sandians recognize these advantages — and all the others. It's fitting for us as a national laboratory to respond so enthusiastically to the U.S. Savings Bond program, and I'm confident that we'll make an all-out effort to gain that top spot this year.

"Look out, Number 1 — here we come!"



# Antojitos

English, Your Tongue of Frog Paul Cooper (7132) sent me a copy of the instructions for the use of a toy frog. Some excerpts: A product has the stickness and is just like a soft rubber band with high contractility. It can be played to stick the remote objects. In spite of it is sticky, it is never like the chewing guns which is glued tightly and cannot be separated. If the stickness is not good enough, it can be washed by soap. The packing paper has printed the bug picture, which can be cut as per the black frame and placed on the table, then you can stick the picture with your tongue of frog. Separate it with two hands, then release one hand, throw it with full of your strength out. The key point for throwing far away is same as the throwing of fish rod, i.e. to throw out slowly with full of your strength. And some cautions: Never throw out to other person's head. In spite of it is non-toxic, it cannot be eaten. Its content has the oil, so if it touches on cloth, precious object or wall, the stains will remain if you don't care about it.

Before chortling at what is obviously a rather inept translation, we might take a look at how the native speakers/writers of English are doing. Again, some excerpts: "Just over 24 hours later, an aircraft carried a donated heart from Stuttgart, and was then transplanted into the woman" (New Scientist; thanks, Phil Mead); made her a bit flighty, I suspect.

"He bought the lottery ticket with his wife and children" (TriLune; thanks, Larry Perrine); most have to use money. "We need to robust our defensive efforts" (Journal; thanks, Jim Mitchell); first let's robust the copy editors.

Sandia's proofreaders need a bit of robusting too: We now have government-issue ballpoint pens labeled "Sandia Laboratories" (more appropriate for an oceanographic lab than for us, it would seem). And a form from Medical that warns the employee to "Report to supervisor following medical absnece" (as in "Absnece makes the heart grow fodner," no doubt). ●BH

\* \* \*

Conversely, "la ausencia borra los recuerdos," or "absence erases memories," or "out of sight, out of mind" (which, in a computer translation, once came out as "invisible, insane").

## Focus on Pulsed Power

### A Busy Day:

Twenty Sandians received awards last Friday for their significant contributions to Sandia's particle beam fusion program, currently the inertial confinement fusion program with the best chance in the nation of achieving fusion in a laboratory.

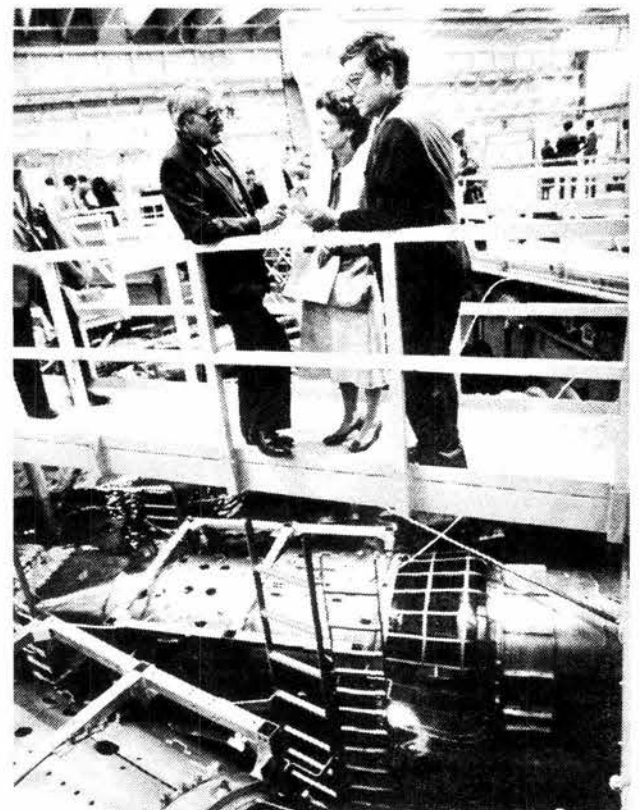
The award ceremony was part of a day-long series of events that included the groundbreaking for the Strategic Defense Facility in Area IV, the dedication of PBFA II (particle beam fusion accelerator), a videotaped version of the morning's SDF groundbreaking in the Technology Transfer Center, tours of Area IV, and a reception for guests.

The guests included three members of the state's congressional delegation, service representatives, and DOE and city officials, plus a host of community and business leaders. Speakers at the PBFA II dedication in the TTC were Ray Romatowski, Manager, DOE/AL; Col. Barry Kamhoot, Deputy Commander, Resource Management, 1606th Air Base Wing, KAFB (representing Col. Charles Thomas, Base Commander); Adm. Bob Foley, Jr., Assistant Secretary for Defense Programs, DOE; Maj. Gen. Ken Withers, Jr., Director of Military Application, DOE; Senator Jeff Bingaman; Gerry Yonas, Chief Scientist, Strategic Defense Initiative Organization (and former director of Pulsed Power Sciences 1200); Congressman Manuel Lujan, Jr.; and Senator Pete Domenici.

During the TTC ceremony, President Welber noted that Sandia is well into its second decade of inertial confinement fusion research, and that PBFA II has high potential for contributing to the nation's fusion program.

Gerry Yonas, speaking for the director of the SDIO, Lt. Gen. James Abrahamson, labeled the new SDF "a place where exciting new ideas to serve our national defense will be proven in the laboratory, and, above all, a place where people will meet to prove their mettle. This is a crucial point, for we must rely wholly on people and their ideas as we search for successful solutions to the ballistic missile defense problem."

The dedication concluded with Pace Vandevender, Director of Pulsed Power Sciences 1200, who showed and narrated a videotape of PBFA II's first shot.



ON A TOUR inside PBFA II, Executive VP Tom Cook discussed inertial confinement fusion and how PBFA II should advance that science with Nancy and Pete Domenici. Pete is the ranking member of the state's congressional delegation.

## Events Calendar

April 13 — Movietime at the KiMo. Boy Meets Girl Series: "Seventh Heaven." American (1927); Janet Gaynor's first Academy Award performance: 7 p.m., KiMo.

April 13 — Concert. Sierra Woodwind Quintet: 3 p.m., Keller Hall, 277-4402.

April 13 — Paul Winter Consort, a musical journey down the Grand Canyon of the Colorado River; UNM Cultural Program series: 8:15 p.m., Popejoy Hall, 277-3121.

April 15 — Piano concert by Mimi Tung, 8:15 p.m., Keller Hall, 277-4402.

April 18-19 — Concert, New Mexico Symphony Orchestra; Anshel Brusilow, guest conductor; Young Uck Kim, violin; music of Schuman, Sibelius, Mozart: 8:15 p.m., Popejoy Hall, 842-8565.

April 19 — Children's Pillow Concert. Chamber Orchestra of Albuquerque: for children from pre-school through elementary grades (and their parents!); concert-in-the-round — bring a pillow to sit on; 2 p.m., UNM Union Ballroom, 247-0262.

April 20 — Concert, UNM Jazz Band; free admission; 4 p.m., Keller Hall.

April 20 — Concert, Albuquerque Youth Symphony (Youth Orchestra, Junior Symphony, and Junior Orchestra): 3 p.m., Popejoy Hall, 277-3121.

April 20 — Mariachi fiesta, free admission, 2-5 p.m., South Broadway Cultural Center (1025 Broadway SE).

April 21 — Concert, UNM Clarinet Choir and Saxophone Quartet; Keith Lemmons, conductor; free admission; 8:15 p.m., Keller Hall.

April 21 — Showtime at the KiMo, On Stage Series: Rita Moreno (only female entertainer to win an Oscar, Emmy, Tony, and Grammy); cabaret show with 14-piece band; 8 p.m., KiMo, 848-1374.

April 22 — Gala Evening of the Stars, presented by Southwest Ballet; dancers from major American ballet companies; 8:15 p.m., Popejoy Hall, 277-3121.

April 23-26 — "Boesman and Lena," a play by South African playwright Athol Fugard; 8 p.m., UNM Experimental Theatre, 277-4402.

April 25, 27, & 29, May 3 — "Faust," Albuquerque Opera/Opera Southwest; 8 p.m., 2 p.m. matinee on April 27; KiMo, 243-0591.

## LAB NEWS

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SANDIA NATIONAL LABORATORIES

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## Awards, Dedication, Groundbreaking, and VIPs



SDF GROUNDBREAKING featured (from left) Ray Romatowski, Manager, DOE/AL; Sandia President Irwin Welber, Adm. Bob Foley, Jr., Assistant Secretary for Defense Programs, DOE; and Gerry Yonas, Chief Scientist, Strategic Defense Initiative Organization. The event was videotaped for later showing at the PBFA II dedication in the TTC.



MAJ. GEN. KEN WITHERS, JR., Assistant Secretary for Defense Programs, DOE, presented awards to 20 Sandians involved in PBFA II design, construction, and operation. One of those was Gerry Barr, Plant Engineering and Services Department 7860. His citation credited "his leadership as the PBFA II project manager, his development of the PBFA II project methodology, and the successful completion of PBFA II on budget and seven weeks early under his direction."



DAVE SEIDEL (1241), Steve Slutz (1265), Becky Coats (1241), Jeff Quintenz (1265), and Bruce Goplen of Mission Research Corp. were cited "for the development and application of two-dimensional, fully electromagnetic, relativistic, particle-in-cell simulations as an engineering design tool for PBFA II to permit the 2 MV and 10 TW diode technology to be extended to PBFA II at 30 MV and 100 TW." Jeff Quintenz accepted the award from Gen. Withers.



ALL SMILES—President Welber, Senator Bingaman, and Congressman Lujan apparently looked forward to their roles in the ceremony dedicating PBFA II last week.



STEVE GOLDSTEIN (1254) accepted his and Gary Peterson's (1254) award "for the development of a new operating methodology that permits the integration of PBFA II with the operations team for efficient, cost-effective, and reliable operation of multi-module, super-power accelerators like PBFA II."



ANOTHER AWARD went to the PBFA II project team "for the interdisciplinary technical coordination that completed PBFA II in FY85, while fully incorporating 1986 pulsed power accelerator technology, to make the only facility in the world with the potential of igniting thermonuclear fuel in the laboratory." The team consisted of: Jim Furaus (7866), accelerator systems integration; Don Cook (1260), project scientist; Ed Burgess (1251), engineering; Steve Goldstein (1254), operations; Bob Turman (1252), pulsed power; Dillon McDaniel (1253), power flow; Paul Miller (1264), ion diode; John Olsen (1263), ion sources and targets; Jerry Hands (7866), facilities; Toby Tobyas (3722), purchasing coordinator; Gene Daniels (ret.), drafting; Ted Simmons (3312), health physics; and Al Fine (3442), safety. Accepting the award for the team was Jim Furaus.



# The Young Man and the Bomb in the Sea

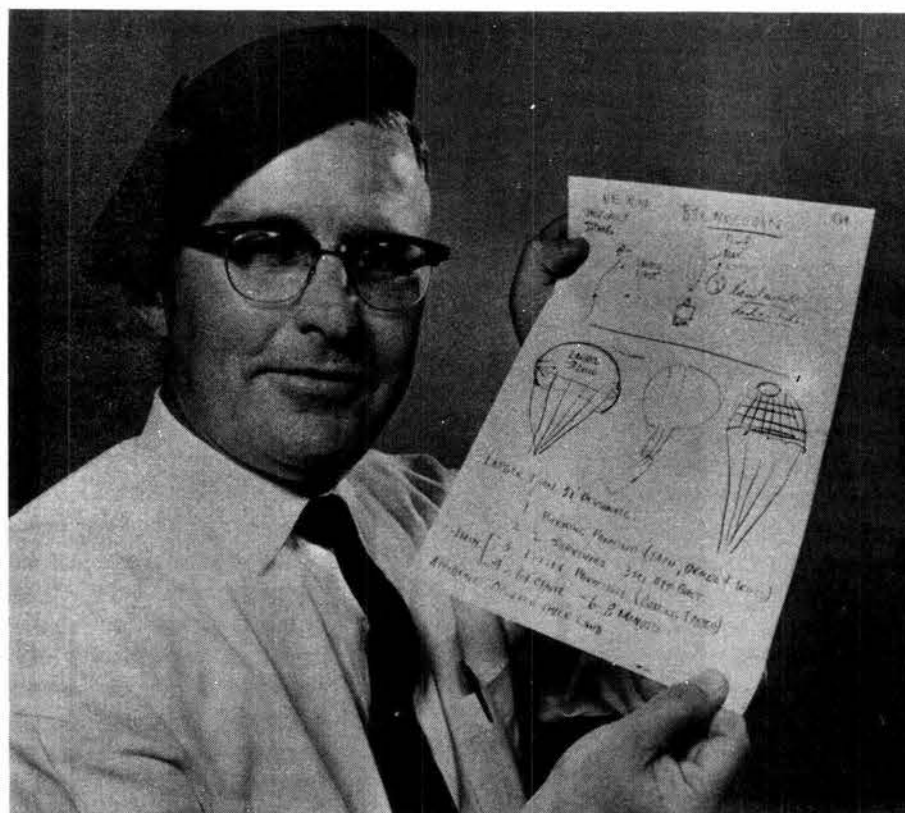
"I'll tell you how slippery the problem was," Randy Maydew (1630) said when Operation Broken Arrow ended, "it was like trying to handle a bag of worms in a bucket of snakes in a barrel of eels."

Twenty years later, the events leading up to the April 7 recovery of the missing H-bomb (see *Time* magazine reprint) are still "the most interesting story of things that ever happened to me in my life," says Randy. "It was lots of fun and yet it was a very serious problem for the U.S."

Three of the four B-28 thermonuclear weapons "were immediately located by USAF Strategic Air Command personnel from Torrejon AFB, Madrid, who arrived in Palomares on Monday, January 17," says Randy. "On January 22, my boss, Alan Pope [then 9300], received a call from Jack Howard, who was then Assistant Secretary of Defense for Atomic Energy, [who] asked if Pope had seen the movie *Thunderball*. Pope said, 'yes,' and Jack said, 'We have a missing bomb and need your help.'" That's when Sandia became involved in a sleuthing task.

The aerodynamics group immediately started its ballistic studies. The midair collision of the KC-135 tanker and the B-52G during refueling essentially had to be reconstructed, everything from altitude, true course, ground speed, to impact point. Only then could calculations of trajectories for all four bombs be made with some certainty.

There were many variables in the equations. It was hard to figure out initially whether the fourth bomb had landed on the coast along with the others or had drifted out to sea. Falling weight also was a missing quantity. "These were difficult calculations because you had to assume different scenarios about the parachutes opening after the crash," Randy recalls. The bomb had both a 16-foot and a 64-foot parachute. Both could have opened, or only one, or even none. The high winds, estimated at about 60 knots, had to be taken into account. A B-52 pilot was rescued 12 miles off shore. He had



WEARING THE BLACK BERET of the Broken Arrow operation in 1966, Randy Maydew (1630; then 9320) shows Senor Simo's sketch of the parachutes he saw from his boat. The actual location of the bomb was 4200 ft. from the fisherman's sighting, including a correction for underwater drift.

## SCIENCE

### APPLIED SCIENCE

#### How They Found the Bomb

The 2,200-man Navy task force that carried out the Great H-Bomb Hunt near the Spanish coastal town of Palomares more than earned its headlines. But the men who conducted an equally productive part of the search were an unheralded group of scientists and technicians in far-off New Mexico.

Soon after the January 17 collision between a nuke-carrying B-52 and its KC-135 tanker over Spain, a desperate Defense Department turned for help to the Sandia Laboratory in Albuquerque, which conducts bomb-electronics research for the AEC. Sandia scientists promptly requested all available accident data from the task force. With other experts, they pored over interviews with surviving B-52 crew members and witnesses on the ground; they studied Air Force wind-velocity records and the ballistic characteristics and impact points of the three recovered H-bombs. By feeding complex equations into computers, they projected trajectories backward from the impact points and established the precise location of the collision—the point from which the missing bomb began its descent.

**Simulated Breakup.** Sandia's next step, reports its house organ, *Lab News*, was to work out what had happened to the lost bomb. Had it broken apart in the air, or come down intact? Had it fallen freely to the land below, or been carried far out to sea on its parachute? To simulate a mid-air breakup, the scientists dropped bomb parts from a high-flying plane at White Sands Missile Range, then photographed the craters

made by the parts as they hit the ground. The pictures were rushed to Palomares, where searchers looked in vain for similar patterns on Spanish soil.

Back at their computers, other scientists of Sandia determined that the radioactive contamination of Spanish soil had been caused entirely by the two recovered bombs that had broken apart on impact. Had another bomb shattered on land, the level of radioactivity would have been higher. Thus the scientists assumed that either the missing bomb had not broken apart on hitting land, or it had fallen into the sea. Further ballistics analysis and wind data enabled the Sandia computers eventually to plot the probable trajectory of the missing bomb and locate where it had hit the water. Their calculations tended to confirm the story of Spanish Fisherman Francisco Simo y Orts, who had reported to skeptical task-force officials that a "stout man" swinging from a parachute had hit the water only about 75 yds. from his boat, five miles off Palomares.

**Precarious Perch.** Late in February, when the final information from Palomares had been processed by the computers, Sandia scientists traced a square on a Spanish coastal chart and said, "Tell *Alvin* (the deep-diving research submarine that eventually found the bomb) to look here." Three weeks later, when the little sub finally located the missing bomb—2,500 feet below the surface, still shrouded in its parachute and perched precariously on a 70° slope—it was 1,200 yards from the final coordinates calculated in a laboratory over 5,000 miles away.

opened his chute at 30,000 ft. And what if the conventional high explosive — the trigger mechanism — had detonated in the air?

Six days later, Randy was requested to fly to Palomares. As he recalls it: "Bob Peurifoy [now 7000], then Department Manager, Exploratory Systems, dropped by my office and presented me with a forked 'nuclear bomb locator' stick to take to Spain."

The village population was nervous by now. Two of the weapons had broken into fragments, resulting in a scattering of plutonium. "At one point, there were 4000 service and civilian personnel on the beach and on board the 18 ships engaged in the bomb search," says Randy. His systems analysis team gathered data from interviews and examination of debris. Former Sandians Stu Asselin, Bill Hoagland, Bob Reed, and Sam Moore — designers of the bomb — were also on the beach sifting through the debris of every bomb. No sign of No. 4.

Trajectory reconstructions were now being made "back home" at Sandia — by Bill Barton (1636; then 9324) and the aerodynamics staff — and at Eglin AFB.

It was a time that tested not only Sandian souls — 16 staffers were heavily involved in the recovery operation at one time or another — but also Sandia's computer capabilities. As *LAB NEWS* reported at the time (April 22, 1966), at least 31 hours of computer time were logged — and some of the initial input was anecdotal evidence. Work on an IBM 7090 and a CDC 3600 resulted in a three-foot-high stack of 15-by-11 in. data sheets.

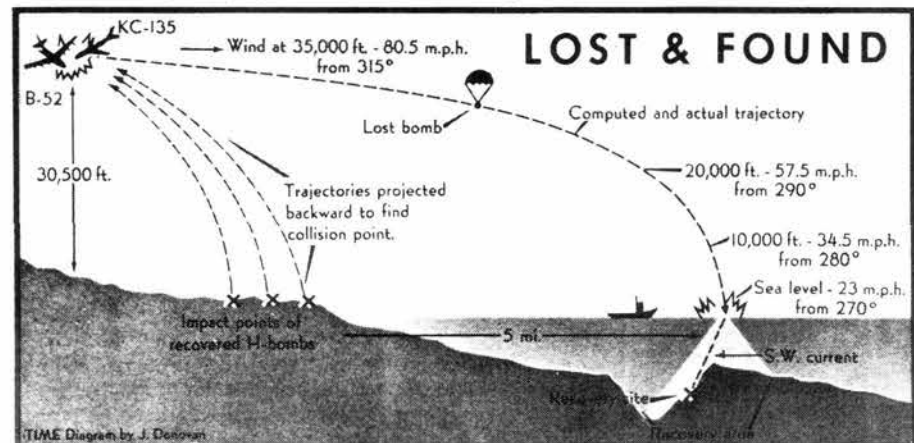
A Spanish fisherman's recollections and drawings of the four chutes he had seen from his boat became a turning point in reaching the solution. He described one chute to Randy as carrying a "dead man," who turned out to be the fourth weapon. "The fisherman could navigate accurately by aligning shoreline objects," Randy says. "Hence, he was certain where the B-28 landed at sea." That "pin point" reduced the prime sea search area from 27-1/3 square miles to four.

The recovery effort at this point, quipped Rear Admiral William Guest, Commander-in-Chief U.S. Naval Forces Europe, "isn't like looking for a needle in a haystack. It's like looking for the eye of the needle in a field full of haystacks in the dark."

The missing bomb finally was located underwater, perched on a steep gully wall at a depth of about 2600 feet, on March 15. Now, Flora Lewis wrote in her book *One of Our H-Bombs is Missing*, the theme song in Washington, D.C., and elsewhere became "The bomb in Spain lies mainly in the drain." Deep-diving submarines and a CURV (Cable-Controlled Underwater Research Vehicle) took over the salvage work.

Stu Asselin had been one of the first people flown out to Spain hours after the accident occurred. He was also the Sandian representative on board the Navy submarine rescue ship U.S.S. *Petrel* on April 7 when the 2,800-lb. bomb, with its high-explosive circuitry intact, was lifted aboard. Air Force experts worked for an hour and a half on disassembling the bomb. When the job was done, "nobody cheered or jumped with excitement, they were all too exhausted," wrote Flora Lewis. There was only "a long, joyous sigh of relief."

Sandia made headlines — in back-of-the-book sections of magazines — and some footnotes in *New York Times* correspondent Tad Szulc's book, *The Bombs of Palomares*. The "Easter egg hunt," as the sailors had called the operation, was over.





# Horning Award to Witze

Peter Witze (DMTS, 8362) and two Combustion Research Facility collaborators from the University of Michigan have won the distinguished Horning Memorial Award of the Society of Automotive Engineers (SAE) for 1985.

This award is given annually to the author(s) of the best paper dealing with the adaptation of fuels and internal combustion engines and presented at an SAE meeting during the year. The competition includes several hundred papers from the industrial and university communities. Prior winners of this award include some of the most notable engine researchers in the world.

The winning paper, "Combustion Effects on the Pre-Flame Flow Field in a Research Engine," was a joint effort of Pete, Jay Martin, and Claus Borgnakke. "Jay and Claus are among several researchers from around the world who have joined this part of the CRF program because of Pete Witze's strong international reputation," states Bill McLean, manager of Combustion Technology Department 8360.

At the time of his research at Sandia, Jay was a graduate student working on his doctoral thesis. Claus, chairman of Jay's doctoral committee, is an associate professor of mechanical engineering at the University of Michigan. After completing the research Jay moved on to the General Motors Research Laboratories and, more recently, joined the faculty at the University of Wisconsin at Madison where he is an assistant professor in mechanical engineering.

Pete labels Jay the main contributor to the research that went into the winning paper. Jay performed the experimental portion of his thesis in Pete's engine laboratory in the CRF. "I was so impressed with Jay when he came here as a summer employee back in 1982 that I proposed to Claus and the University of Michigan that Jay return to do his graduate thesis with me," says Pete. This proposal was approved by the UM faculty, and Jay finished his research toward the thesis in the spring of 1984. Out of this collaboration came five published technical articles in the SAE transactions and combustion research journals.

The research involved conditionally sampled laser Doppler velocimetry measurements of the



PETE WITZE (DMTS, 8362), co-winner of the 1985 Horning award for best paper presented at a Society of Automotive Engineers meeting, is shown in his Laser Doppler Velocimetry engine lab with Bill McLean (8360, left).

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effect of combustion on the pre-Flame flowfield in a research engine. Turbulence intensities were measured at different locations in the combustion chamber as the flame passed through the measurement volume. Results of the study suggested that predictions of the turbulent combustion process in engines will need to include the effects of turbulence amplification during flame propagation.

The program under which Pete sponsored Jay and Claus at Sandia is funded principally by DOE's Division of Energy Conversion and Utili-

zation Technologies. Additional support has been given by the Associated Western Universities and the Motor Vehicle Manufacturers Association.

The three authors will be honored in October at the annual SAE Fuels and Lubricants meeting in Philadelphia. Each author will receive a bronze medallion and a framed certificate. The only other Horning award winner from a national laboratory is Mike Dyer (8362), who received it in 1979.

SLI'S SECRETARIAL COMMITTEE for 1986: (from left) Tonni Nunley (8022), Dawn Tockey (8431), Sharon Frazier (8347), and Linda Kuckenkaker (8233).



### 55 MPH Costs 7 Hours/Year

"A Natl. Research Council study on the costs and benefits of the national 55 mph speed limit found that after accounting for reduced travel, safety improvements in automobiles and highways, and other factors, the reduced speeds resulting from the 55 mph maximum speed limit save between 2,000 and 4,000 lives per year. It also estimated that slower speeds have reduced serious highway injuries by about 2.6% and

have lowered highway fuel consumption by just under 2%, a savings of about \$2 billion per year at current fuel prices. Savings to taxpayers through avoided payments to Medicare, Medicaid, and other benefits programs amounted to about \$65 million per year. The chief cost of the 55 mph law, said the committee, is a total of about one billion extra driving hours or an average of about seven hours per driver per year."

Gail Porter, News Report

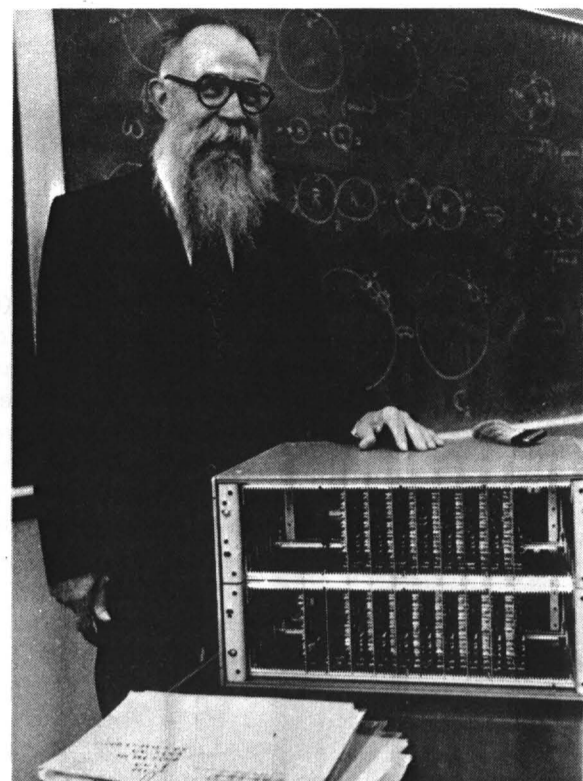
## Retiring



JIM SHELEY (8161)



## Excellence Awards Presented to Simmons, Moyer, Alls, Benedetti, Jorgensen, McCoy, Dalby, Harrison, Sharp

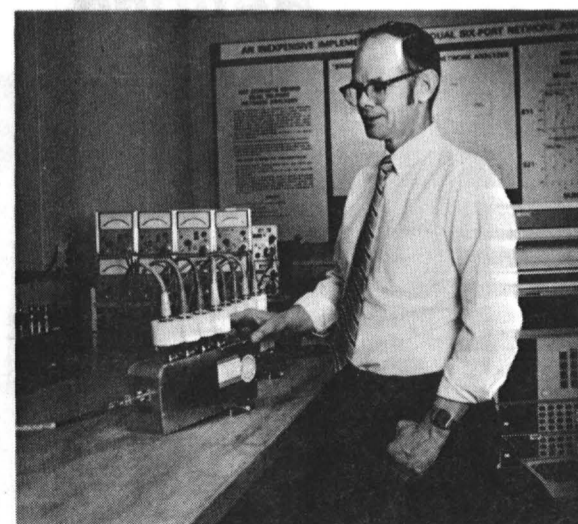


GUS SIMMONS (1640) demonstrates a data encryption standard (DES) engine, used to investigate the structure of DES mapping. The DES engine has phenomenal capability; it does almost 20 billion encryptions per day.

analytical investigation of the PAL code management system, which resulted in improved security of PAL-controlled weapons in Europe.

Gus was the first to recognize that two-key cryptography allowed an authentication channel, as well as a secrecy channel. He has applied the authentication channel concept to problems as diverse as a personnel identity verification system and the authentication of seismic signals that could help to verify compliance with a comprehensive test ban treaty. His department's research in cryptology and authentication has made Sandia an internationally recognized center for work in this area. Last year, at the request of the editors of *Encyclopaedia Britannica*, Gus wrote the cryptology section for the new *EB* edition (see LAB NEWS, Nov. 8, 1985).

"I'm really proud of this one [the DOE award]," says Gus. "Command and control is the center of gravity of my whole career at Sandia."



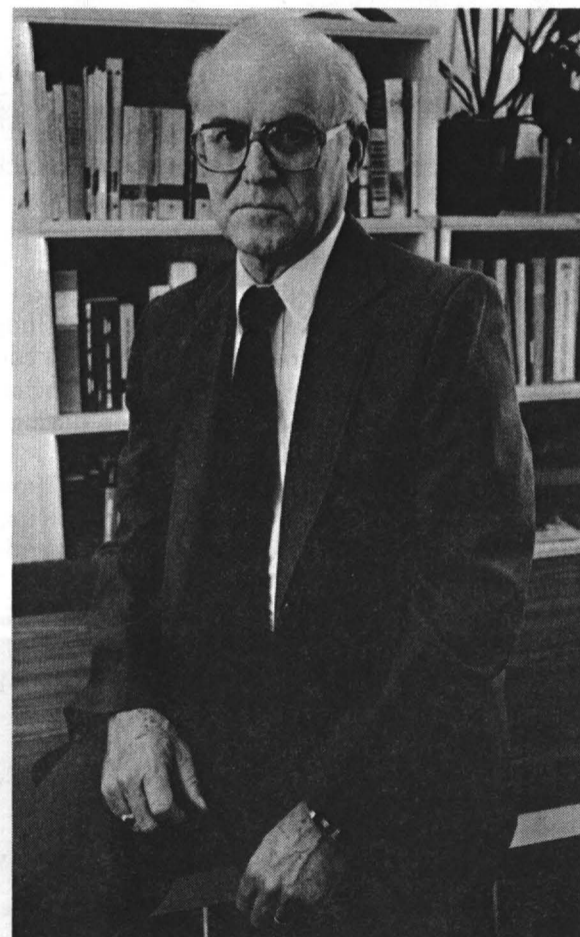
BOB MOYER (7242) was responsible for implementation of a dual six-port network analyzer (behind him) in Sandia's Primary Standards Lab. The analyzer measures microwave scattering parameters, and is the most accurate existing system for such measurements.

BOB MOYER (7242), for work on the development of standards and techniques for microwave measurements.

Bob, a project leader in the Electrical Stan-

dards Division of the Primary Standards Lab, calibrates all microwave standards for the DOE/AL weapons complex and develops new high-accuracy standards and techniques for microwave measurements. He has the same function within Sandia, interacting with the component development, research, and systems organizations. He's also the DOE observer on the DoD calibration coordination group's RF Working Group. Bob has been in the standards business all but 5 of his 27 years at Sandia. "I'm not a mathematician, but math has always intrigued me," he says. "My standards work lets me get into some fairly interesting mathematics. It's satisfying to put hardware together, program the mathematics for it, and come up with a good result. Matching the hardware with the math theory is very challenging."

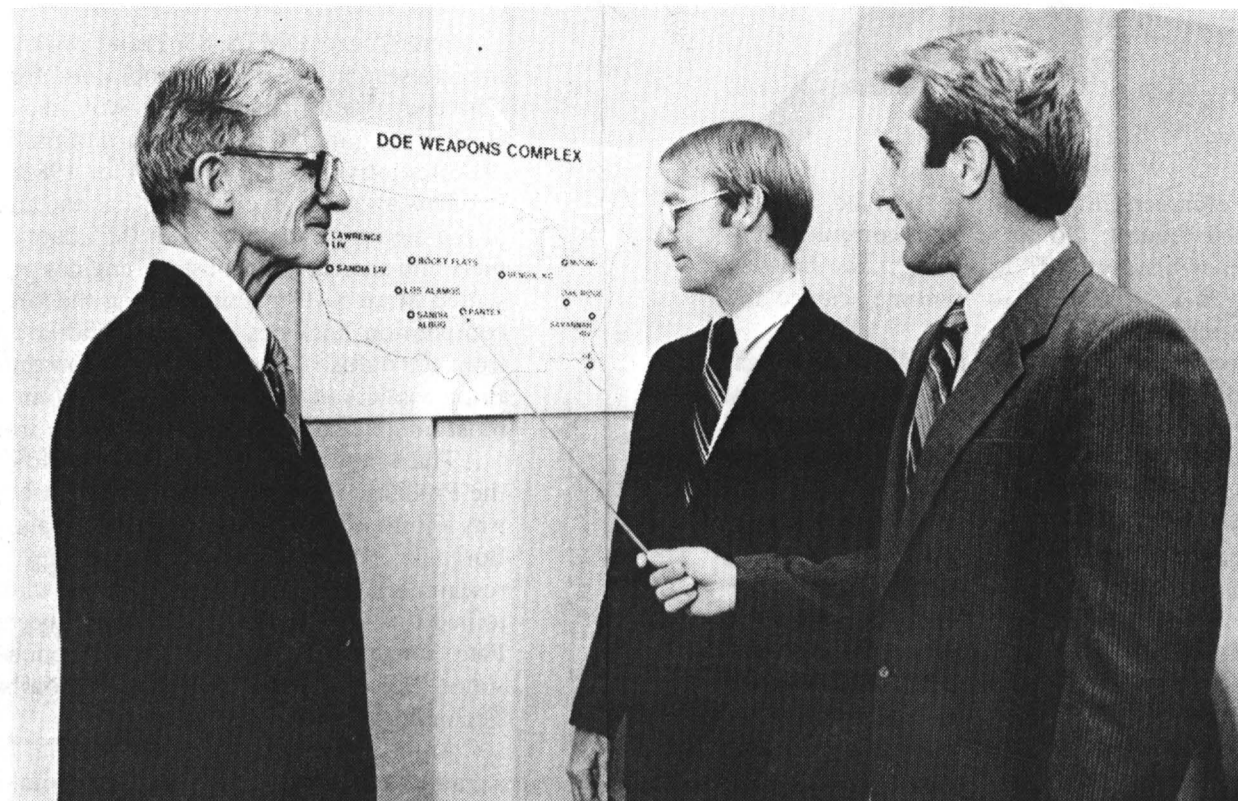
Bob's major contributions include the development of a peak power ratio generator (see LAB NEWS, Dec. 6, 1985) and implementation of a dual six-port network analyzer. The peak power ratio generator, for which a patent was issued last year, is used to measure peak power in radar signals down to seven nanoseconds; until now, the best commercial system could measure only those pulse widths of fifteen nanoseconds or more. Bob has also developed highly sophisticated software to analyze data and calculate results from measured qualities.



RAY ALLS (2341) was recognized for his design and development work on nearly every radar fuze in the U.S. nuclear stockpile over the past 30 years.

RAY ALLS (2341), for work on the design and production of radar fuzes for nuclear weapons. Ray has made significant contributions, either as a designer or as a supervisor, to the design and development of nearly every radar fuze in the U.S. nuclear stockpile over the past 30 years. He participated in or supervised the Phase 3 development of these fuzes, resulting in every case in a successful and trouble-free production program without a single cause for stockpile retrofit — a record to be proud of.

He has repeatedly developed and applied methods of process control, packaging, and manufacturing that have resulted in stable and pro-



SHOWN WITH A MAP of the nuclear weapon complex are (l to r) Walt Dalby (5153), John Sharp (2811), and Randy Harrison (2812). They represented Sandia on a team that recommended guidelines for an NWC information system.

WALT DALBY (5153), RANDY HARRISON (2812), and JOHN SHARP (2811), for work on the nuclear weapon complex interagency information study. Walt, Randy, and John represented Sandia on the Interagency Information Study (IIS) team that studied long-range planning for computer integrated manufacturing (CIM) in the Nuclear Weapons Complex (see LAB NEWS, Nov. 22, 1985). The team, with representatives from each of the NWC agencies, recommended guidelines for an information system that would integrate design, development, testing, production, and stockpile information with program, cost, and schedule data. IIS team members collected data during the year-long study by interviewing people at all NWC agencies to pinpoint

ducible systems. For the past two years, his product has achieved both a remarkably low (less than 3 percent) defect rate at final acceptance testing and an annual QAIP (DOE's Quality Assurance Inspection Procedure) quality index of 100 percent — the first such record for full years of production ever achieved at Bendix.

Ray, who's supervisor of Electronic Development Division I in the Radar Department, has been involved with radar design and development work since he joined Sandia in 1954. What's the biggest change over the years? "The technology," he says. "Computers, for example, were not used back in the early days. Now we rely on them every day. The tools we use [e.g., testers] are very different from those we had in the '50s. And the components we work with are extremely small in comparison to the old ones. All of these things enable us to build an end product that's smaller and lighter, yet has much more capability."

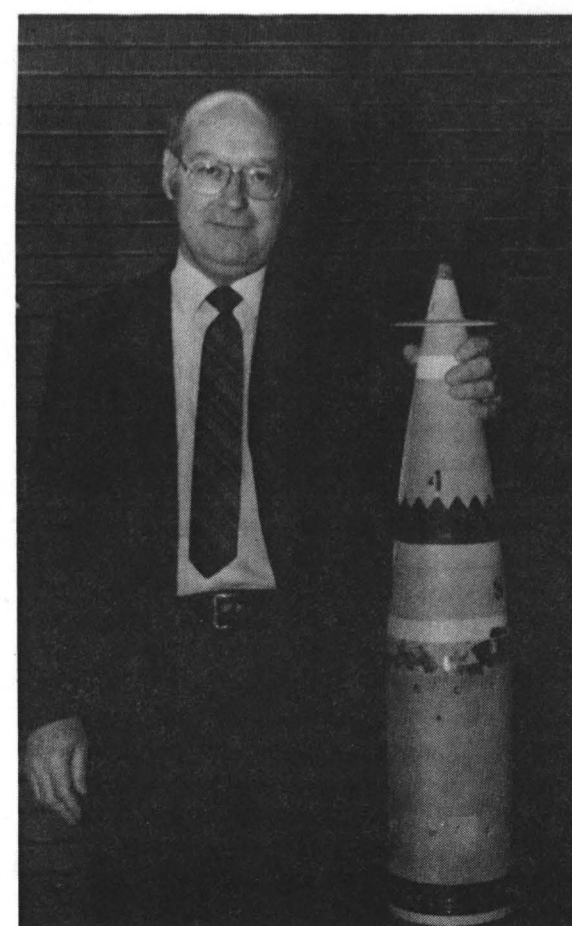
G. A. (BEN) BENEDETTI (8241) for work on the identification of in-bore cannon environments.

Ben was the lead structural analyst on the W79 artillery shell program and, as such, was responsible for assuring the structural design of that system. He worked closely with the engineers who proved experimentally that the design would perform as anticipated. That proof involved a test program, an instrumentation pro-

gram, and the development of a recovery system.

John, who served as IIS project leader, says, "This is the first time that a multi-site/multi-viewpoint assessment of NWC information needs has been performed."

If the NWC elects to implement the plan, the pilot project will eventually involve all interagency information exchange activities. A state-of-the-art information exchange system would have a far reaching effect on the NWC by eliminating existing redundant data bases and establishing a functional model of information flow within the complex. The result: future production of high quality weapons at the lowest cost. The IIS study showed that such a system is technically feasible.



DISPLAYING a 155 mm projectile fired from a cannon that induced torsional impulse is award winner Ben Benedetti (8241).

Ben's identification of a previously unknown environment within the bore of a cannon (and a measurement scheme to quantify it) came as the project team was trying to understand the cause of failure in a W79 test vehicle. His discovery—which he termed "torsional impulse"—was that, instead of a fired projectile's beginning its forward and rotational motions simultaneously, a projectile may reach a significant axial velocity well before its "rotating band" (the copper ring at the base of the shell) engages the rifling in the gun tube that begins its spinning motion.

Since this discovery, the artillery community has come to recognize the significance of Ben's work. He and Don Bohrer, manager of Systems Development Department I 8160 and the former W79 project supervisor, have discussed the phenomenon with NATO conventional artillery designers both in the U.S. and abroad. It has become recognized as a problem that must be faced in the design process and as an explanation for past failures of projectile componentry—especially in conventional weapons. "In fact, Ben's discovery was probably the most significant event in the development of the W79," says Don.

Ben has been at Sandia for 22 years, all of that time in the applied mechanics area. He left for four years to earn his PhD in engineering, and became supervisor of Solid Mechanics Division 8241 in 1979.

DICK JORGENSEN (5113) and DON MCCOY (5111), for work on the management of the stockpile improvement program. Dick and Don were recognized for their management of stock-



DON MCCOY (5111; left) and DICK JORGENSEN (5113) were recognized for their work on management of the stockpile improvement program. They're shown with a model of the B61, one of the weapons modified during the program.

pile improvement programs on the B28FI, a SAC bomb carried by the B-52 aircraft; the W31, a warhead used in the Nike-Hercules missile; and the B61-7, a general purpose SAC bomb carried by a variety of aircraft. (The B28FI program was completed in 1983; the other two improvement programs were completed last year. Each program resulted in cost-effective and on-schedule delivery of the intended product.)

These programs resulted from the DOE Stockpile Modernization Study conducted in 1978. Program objectives were to correct safety and security concerns on weapons that had been in the stockpile for a relatively long time. For example, the B61-7 is a factory retrofit of the B61-1, originally produced in the late 1960s, and the W31 and B28 (originally produced in the late '50s) are field retrofits performed by the using services, e.g., Army, Air Force. The programs also achieved improvements in selected operational characteristics.

Dick, supervisor of the W31/W85/B61-3,4 Division; Don, supervisor of the B61-7, W80, W81 Division; and their groups managed the only stockpile improvement programs that achieved corrective action through hardware modifications. "This was really a team effort," says Don. "A lot of people at Sandia — including system design and evaluation groups, and component development groups — worked together to come up with the improvements we were seeking."

Dick continues, "We also received a great deal of support from people outside the Labs — for example, representatives from the DOE integrated production complex and from the using services."

### Earlier Excellence Award Winners

1982 Jack Marron (2532), Jim Craig, Dick Damerow (2561), Ed Kjeldgaard (6321), Dick Brodie (DMTS, 5000), Harold Vaughn (1631), Al Hodapp (DMTS, 1631), Bob Thompson (1641), Larry Bertholf (8430), Ruth Whan (1820), Tom Massis (2515), Don Sharp (1831), and Fred Villa (2512).

1983 Stan Spray (7232), Bob Graham (DMTS, 1131), Dan Tichenor (8474), Ken Henry (8444), Wilbur Jorgensen (8431), Tom Martin (1250), Ken Prestwich (1240), and Bill Chambers (1822).

1984 Vic Roh (ret.), Peter Rand (1813),

Rod Quinn, Jim Searcy (2525), Arlen Baldwin (2523), Jim Jorgensen, Wayne Corbett (2114), Won Kim, Keith Treece (DMTS, 2115), Tom Mnich, Rich Anderson (2142), Doug Weaver (2130), Ron Light (2131), Terry Nordstrom, Fred Sexton (2142), Frank Neilson, Bill Sundt, Ed Williams (DMTS, 8153), Curt Franklin, and Russ Miller (8131).

1985 Bill Stevens (ret.), Bob Luna (6321), Paul Longmire (2360), Steve Burchett (1521), Gordon Boettcher (DMTS, 2565), Cook Story (8316), and Morris Mote (DMTS, 8316).





GENE IVES (8100) RETURNS to Albuquerque on April 20 to perform the lead in Mendelssohn's *Elijah*. A choir, cast, and crew of more than 100 people will take part in *Elijah*, including Sandians Carol Kaemper (21), Doris Hoffman (1512), Ann Yates (2813), John Long (7523), Betty Mowery (7545), Stephanie Kuzio (7864), and Ken Kuzio (7842). The stage direction and lighting are by Gary Shepherd (2614). Two performances will be given, free of charge, at 4 and 7:30 p.m., at First United Methodist Church, 4th & Lead SW (243-5646). (In this photo, Gene's co-star Jack Stanton is on the left.)



Volunteers in Action has received a rather unusual request: Do we have a computer programmer/history buff? That's right, we have an interesting opportunity to combine science and the humanities.

John Kessell, editor of the Diego de Vargas papers at UNM, needs some programming assistance. Kessell is editing the journals of Diego de Vargas, Spanish governor and recolonizer of New Mexico, 1691-1704. The English translation journals—six volumes—are a richly detailed account of reconquest, accommodation, and coexistence in colonial America, and are Scheduled for publication in time for UNM's Centennial in 1989.

Kessell needs a programmer familiar with the IBM PC to help organize the data base for the de Vargas project.

If you would be interested in helping with this project (weekend/evening time can be accommodated), please call Karen Shane (4-3268).

### Sympathy

To Andrew Ashbacher (7818) on the death of his mother in Albuquerque, March 21.

To Jim Linn (6257) on the death of his father in Nebraska, March 21.

To Joe Llamas (7556) on the death of his sister in Arizona, March 28.

To Max Littleton (7263) on the death of his mother-in-law in Nebraska, March 29.

To Dyan Clements (7263) on the death of her grandfather in Wisconsin, March 30.

To Leopoldo Armijo (7818) on the death of his mother in Albuquerque, April 3.

To Josephine Lopez (3426) on the death of her brother in San Francisco, March 30.

To Ursula Besse (3426) on the death of her mother-in-law in Germany, April 1.

To Louis Zelnio (1652) on the death of his father in Albuquerque, April 2.

## Welcome

- Albuquerque*  
James Porter (2363)
- New Jersey*  
John Clever (2612)
- Texas*  
James Lutz (1654)

## Congratulations

- Sue and Nicholas Sanchez (3154), a son, Collin Neil, March 15.
- Kathleen and George Gabaldon (7818), a daughter, Vanessa, March 18.
- Ana and Tom Hesch (7474), a son, Brian Reuben, March 21.

## Fun & Games

*Coed Soccer* — Election of officers is scheduled for 4:45 p.m. next Wednesday, April 16, at the annual meeting of the Sandia Labs' Soccer Association, at the Coronado Club. Ideas for the upcoming soccer season — summer and fall — will be kicked around at that time. Danny Gallejos (3743), SLSA's president, hopes that men and women alike will keep the ball rolling. Newcomers and all members are welcome. For more information, call Danny at 4-9233.

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*Tennis Clinic* — Today is the final day for signing up for STA-sponsored tennis clinics. They're coming up fast: next weekend, April 19-20, at the Coronado Tennis Club courts. Jay Volkman, resident tennis doctor, charges a flat \$12/hr. fee that can be split among up to four people. Register now, pay and play later. The nets go up April 26-27 for the first tournament. Call Terry Martinez (1250) at 6-7806 for more info on how to negotiate time, day, and registration fee.

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*Running* — New Mexico's only 25-km. run is not only good for your health, but also a benefit for a young boy with brittle bones and large hospital bills. The fifth annual run for Lenny Marquez is not taxing, in that you are allowed to walk, run, or bike all or part of the way. The place to meet is the Husky Truck Stop at I-40 & Coors,

on April 27 at 7 a.m. The run starts at 8 at Laguna Pueblo and ends at the grotto of Los Portales in Seboyeta with a potluck dinner. A \$5 donation for T-shirts is requested. For details, call Chuck Atencio (2832) on 4-6886.

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*Scuba Diving* — Take the plunge on April 24 when pros from Watersports, Inc. offer you a free "Scuba Experience" at the KAFB Olympic pool at 6:30 p.m. Nothing ventured, nothing gained: Either you'll meet your Waterloo, or you'll wet your appetite for SERP's scuba class later on in the year (a water bird told us that the course will lead to PADI open-water certification, and will cost 1/3 the price of last year's class). For more info, call the SERP office at 4-8486.

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*Windsurfing* — Anyone interested in forming an early windsurfing class (beginning or intermediate level), please contact the SERP office at 4-8486. If there are enough surf-riders, classes could take off this month.

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*Aerobics* — Time is running out for those who intend to do more than read about sports events in the LAB NEWS but are not in shape and are not enrolled in SERP's Aerobics class. The exercises are an hour long, and include warm

ups, cardiovascular aerobics, warm downs, floor work (for hips, thighs, buttocks), and static stretching. Time and place are 5-6 p.m. Mondays and Wednesdays at the Coronado Club ballroom (upstairs). Contact Terry Martinez (1250) at 6-7806 for details.

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*Bowling* — The last tournament of the '85-'86 season is a couples event in Scotch Doubles format (six games per doubles team). SANDOE members and their guests are invited to Fiesta Lanes on April 12-13. The entry fee is \$4.50 per member and \$5.50 per guest. A minimum of one prize for each six entries will be awarded. Get your entry blanks to Fred Gunckel (2545) on 6-7235, or Dora Gunckel (6410) on 4-4052 by noon today. See you at the bowl game!

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*Golf* — The results of the Cochiti Nature Walk tournament are in. Under the new Stableford format, points were awarded for net birdies and eagles. The winners of the first flight were Ted Garcia and Mabe Foster (both of 2631), with a total of 59 points. The winners of the second flight were Bruce Kay (1841) and Mike Coltrin (1126), with a total of 60 points. The third flight winners were Jerry Ford (2632) and Gerald Ward (2832), with 60 points. A total of 98 linksters participated.



## Wine Tasting Party Honors VIA Participants

In celebration of voluntarism and National Volunteer Week (April 21-25), President Irwin Welber is hosting a wine tasting party on Tuesday, April 22, at the Coronado Club from 4-5:30 p.m. for participants in Sandia's Volunteers in Action (VIA) program.

Karen Shane (3163), VIA coordinator, reports that nine New Mexico vintners have donated libations for sampling at the party. "Representatives from the wineries will be on hand to answer questions about their wines," says Karen. "We're delighted that these vintners so graciously responded to our request for help in this salute to VIA volunteers. This is a great opportunity to sample wines from around the state. Wines produced in New Mexico have gained much praise recently from those in the wine critiquing business.

"We sent party invitations to VIA participants last week," she continues, "and we want them to know it's not too late to sign up." (Give Karen a call on 4-3268 if you haven't sent your RSVP as yet.)

Along with President Welber, who will be greeting VIA volunteers and expressing his thanks for their efforts, a distinguished group of wine pourers, all members of the VIA Committee, will be on hand: Glen Kepler (1810), Bill Alzheimer (5120), Art Arenholz (3710), Jim Arthur (ret.), Jerry Kennedy (7130), and Don Schueler (6220).

Hors d'oeuvres and snacks will accompany the wine samples, and David Judd (2625) and his clarinet quartet will provide music for the occasion.

Party attendees also have a chance at some door prizes donated by various Albuquerque organizations. The prizes include: a year's family pass to the N.M. Museum of Natural History; dinner for two at the Cooperage; pairs of tickets to three N.M. Symphony Orchestra concerts — B. J. Thomas, Music Under the Stars, and Beethoven's "Fidelio"; and a pair of tickets to the Albuquerque Civic Light Opera Association's production of "Damn Yankees."

"We hope all VIA participants [almost 600] can be at the party," says Karen. "We've had a tremendous response from Sandians to the program in its three years [VIA was launched in April 1983]. Now it's our turn to express our appreciation for their efforts. What better time than National Volunteer Week?"

VIA was organized to serve as a link between Sandians (both on-roll and retired) and community organizations that need volunteer workers.



SERENADING THE VOLUNTEERS during the April 22 wine taste will be clarinetist David Judd (2625) and the other three members of Los Quatro Canas (The Four Reeds). In spite of the Livermore-oriented libation shown, the wines served will all stem from New Mexico vineyards.

The program keeps participants informed about volunteer opportunities that match their personal interests and talents. "Of course, hundreds of Labs employees were spending some of their spare time in volunteer service long before VIA was established," says Karen. "But others who wanted to help in the community had no way of getting information about current projects and needs. VIA gives them a hand in making initial contacts."

New Mexico vintners donating wine for the party are: Anderson Valley Vineyards (Albuquerque), Binns Vineyards & Winery (Las Cruces), Chiavario Vineyards (Belen), La Chiripada Winery (Dixon), Rio Valley Cellars (Bosque), Sandia Shadows Vineyard & Winery (Albuquerque), Santa Fe Vineyards (Santa Fe), St. Clair Vineyards (Deming), and Westwind Winery (Bernalillo).

## Take Note

Jerry Soden (2142) and Charles Hawkins, assistant dean in UNM's College of Engineering and frequent summer staffer in 2100, wrote a paper selected as the best of more than 100 papers presented during International Test Conference 1985. The paper, entitled "The Electrical Behavior of Gate-Oxide Short Defects," won the pair a plaque and a check for \$1000, which will be presented at ITC '86 in Washington next fall.

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Former VP Research (1968-71) Sol Buchsbaum, who is now Executive VP, Customer Systems, at AT&T Bell Labs, was one of 20 scientists to receive the National Medal of Science last month. Presented by President Reagan, the award serves to recognize Buchsbaum's contributions to national science and technology policy as well as his studies of solid-state plasmas.

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Some 2000 Democrat and Republican poll workers are needed for both the June 3 primary

and Nov. 4 general elections. If you are interested, call the Bernalillo County Clerk's Office, Voter Registration Section, on 768-4085.

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A telephone hotline has been set up to provide information about Health Fair New Mexico, a statewide health screening and education event running through April 20. Local sites include Winrock, the Convention Center, Harrison Middle School, Cibola High, Emerson Elementary, Montgomery Mall, Rio Rancho, Belen, and Tijeras. The hotline number is 256-2107.

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A PBS program, "Visions of Star Wars," that includes some footage shot at Sandia is scheduled to appear on KNME Channel 5 on April 22 from 8 to 10 p.m.

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If you've been telling yourself, ineptly, that it's time to improve your speaking ability, check out Toastmasters. One such is the Beta Aloosters group, which meets every Monday from noon to

1 at the Coronado Club. Visitors are welcome. More info from Rich Yoshimura (294-0224) or Ida O'Guinn (265-0424).

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Attention: Southwestern gardeners! The N.M. Cactus and Succulent Society will be holding its annual plant show and sale on Saturday, April 19, from 1:30 to 4 p.m., and on Sunday from 10 a.m. to 4 p.m., at the Albq Garden Center, 10120 Lomas Ne (Los Altos Park). Admission is 50 cents for age six and up, and is good for both days. For info on entering the judged show, please call Ralph Peters at 293-6356, evenings only. A silent auction of special specimens will be held at the same time.

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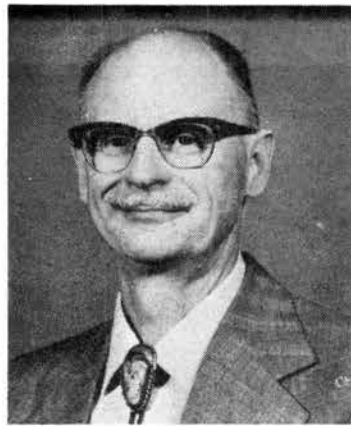
Retiring this month but not shown in LAB NEWS photos are: Donald Bunten (7841), Ira Hamilton (6452), Elliot Harris (3153), Donald Lundergan (310), Thomas Myers (1823), Robert Pedersen (7223), and Warren Curry (1631).



# MILEPOSTS

## LAB NEWS

APRIL 1986



Warren Curry (1631) 35



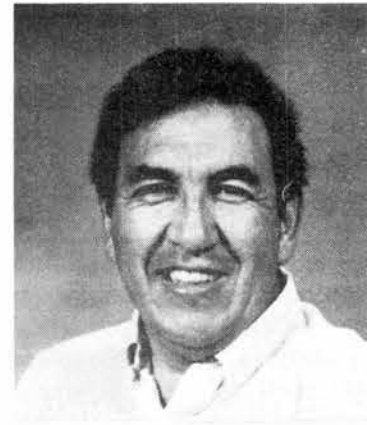
Nancy Barela (3462) 35



Harry Saxton (2500) 15



Don Benoist (7213) 25



Gilbert Apodaca (3155) 20



Dean Pershall (321) 10



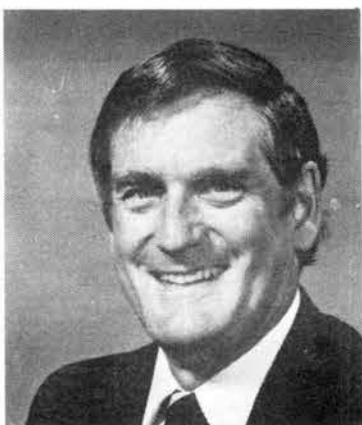
Gilbert Muniz (2853) 10



Patricia Newman (3144) 15



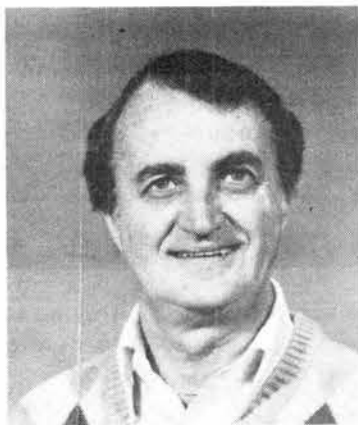
Al Skinrood (8471) 30



Herb Filusch (5311) 30



Imogene Lord (3733) 10



Harry Rouckus (2851) 30



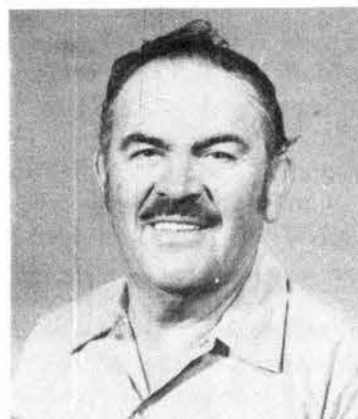
Tom Hoban (7520) 35



Larry Predika (5261) 10



Carl Schoenfelder (8315) 25



Esquipula Narvaez (7818) 20



Deadline: Friday noon before week of publication unless changed by holiday. Mail to: Div. 3162.

**Ad Rules**

1. Limit 20 words, including last name and home phone.
2. Include organization and full name with each ad submission.
3. Submit each ad in writing. No phone-ins.
4. Use 8 1/2 by 11-inch paper.
5. Use separate sheet for each ad category.
6. Type or print ads legibly; use only accepted abbreviations.
7. One ad per category per issue.
8. No more than two insertions of same ad.
9. No "For Rent" ads except for employees on temporary assignment.
10. No commercial ads.
11. For active and retired Sandians and DOE employees
12. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.

**MISCELLANEOUS**

CEMETERY LOTS (2), Sunset Memorial, \$700 each. Starkey, 842-6256.

JAYCO FOLD-DOWN CAMPING TRAILER, '82, sleeps 6, sink, stove, icebox and awning, \$2000. Shannon, 821-6017.

PORTA-CRIB, mattress, bumper guards, sheets, \$25; B&W 19" TV, \$45; easy chair, blue print, \$45. Duvall, 881-4406.

LAWNMOWER, Sunbeam electric, 19" cut, \$70. Moyer, 881-3879.

PORTABLE FAN, Dominion "Breeze Box," 20" dia. blade, case 22" square by 6" deep, \$10. Schkade, 292-5126.

SEARS 10" RADIAL ARM SAW, \$175; Wards gas stove, \$100 OBO. Eisenberger, 877-7041.

COFFEE TABLE, \$75; ceiling fan w/fixture, \$30; swivel rocker, \$25; console TV, needs work, \$20; baby stroller, \$30. Sanchez, 897-0743.

TIRES, 2 P215/75, Big O whitewalls, \$15 ea.; various rims; chain link gate, 4'5" x 4'8", \$25; Chilton's Guide for '70-'77 Maverick. Padilla, 877-2116.

FREE PHOTINIA, 5-gal. size, you dig and furnish top soil to fill hole. Rainhart, 821-3690.

CAMPER, sleeps 6, self-contained, jacks; free horse manure. Riley, 869-2119.

BOSE 901, Series One, speakers, equalizer, stands, \$500. Kovacic, 281-1754.

OLYMPUS OM10, 35mm camera w/50mm lens, strap, shutter cable, flash unit, filter, tripod + case, \$200 OBO. Fajardo, 296-6845.

BONDWELL 12 PORTABLE COMPUTER w/2 360K floppies and 128K RAM, \$899. Randle, 243-1321.

REFRIGERATOR, \$85; living room furniture, make offer. Falacy, 293-2517.

CAMERA, 35mm, Mamiya-Sekor, 500 DTL w/200mm lens, 55mm lens, 2X converter and flash, \$100. Fleetwood, 296-7850.

TRAVEL TRAILER, '79 Comet, 23', self-contained, front/rear entrances, rear bath, sleeps 6, \$4800. Fitak, 281-2748.

FREE PUPS, 1/4 lab, 1/4 shepherd, 1/2 bum; 16" children's bike, \$30. Jarrell, 281-9576.

COMPLETE AM/FM stereo cassette phono system, almost new, \$60. Gendreau, 268-3436.

GOLF SET, youth's, 3 irons, putter, #1 wood, bag, MacGregor, \$50; bathroom sink, w/Formica top, 77" long, \$75. Strance, 298-0258.

CANOE, 15', fiberglass w/paddles and life preservers, \$200. Chorley, 296-1454.

TRADE OR SELL: contractor's wheelbarrow; large (4-load) umbrella clothesline; Bentwood coat tree. Hovorka, 299-0224.

HORSE, gentle bay Tennessee Walker gelding, smooth gait, 16 hands, \$900. Reynolds, 281-1491.

TURNTABLE, CRAIG, Model 5101, little usage, \$30. Hutchins, 884-3214 evenings.

5 x 7 VIEW CAMERA w/4 x 5 reducing back, 4 lenses, more, \$250; Nikon F body, \$100; misc. darkroom equipment; beginner's 5-string banjo, \$35. Strip, 292-7490.

SCUBA PRO DIVING GEAR, regulators, buoyancy compensator, power inflator. Garcia, 831-0395, leave message.

AIREDALE PUPPIES, AKC registered, champion lineage, \$250. Shunny, 268-6484.

'71 CAMPING TRAILER, Aristocrat, 19', self-contained, \$2500. Chavez, 242-6078.

BLACK STEEL PATIO STAIRS, w/intermediate landing, approx. 12'; wrought iron patio railings, black, make offer. Rea, 296-4620.

25/06 MAUSER ACTION, P.O. Ackley barrel, 3X-9X scope, sling, \$300. Hart, 281-1346.

CANON SLR, w/ 35mm, 85mm, 200mm lenses, \$200; Durst enlarger, Nikon lens, complete darkroom, \$200. Ginn, 883-0004.

CAMERAS: Olympus OMG, 35mm, f/1.8 lens, \$150; Yashica D 2 1/4 twin lens reflex, \$80. Graham, 293-8823.

DRUM SET, snare w/stand, Hi-Hat, 2 15" Zildjian and one 18" Zildjian cymbals, \$350. Miller, 268-5992.

FREE, working 23" Motorola color television without cabinet. Davidson, 294-4571.

COLLECTION of Dixieland jazz records ('30s, '40s), 78, 45, 33-1/3, \$50 OBO. Ball, 344-4373.

TUBE TESTER, GM, Precision Model 10-40, current tube data, \$45. McConnell, 268-3109.

CAMPER TRAILER, folding, sleeps 8, canvas, tires, stove, furnace, sink, icebox, spare tire, everything. McGuckin, 299-1342.

SILENT AUCTION, to benefit Sandia High School, featuring art objects, new items, and special services, April 19, 5 p.m. at SHS. Miyoshi, 821-9118.

SAILBOAT, CATALINA 22, w/trailer, outboard, galley unit, porta-potty, battery, lights, sleeps 5, many extras, ready to sail. Horton, 883-7504.

SECTIONAL COUCH, off white, easy to move, \$50. Vogel, 821-1889.

EPSON MX-80 w/Graftrax, new print head, works w/many computers, \$275. Barnett, 292-5186.

'78 OLDS passenger car service manuals, \$15; '73 light Chev. truck service manual, \$10. Meikle, 299-4640.

'84 JAYCO camping trailer, sleeps 6, stove, icebox, full awning, less than 1000 lbs., asking \$2500. Perrine, 293-1429.

7 CASSETTE TAPES, big bands, Time/Life Platinum quality, played once, \$2 each. Krahling, 268-8126.

KING SIZE WATERBED, heater, liner, headboard, 2 months old, asking \$200, \$350 new. Garcia, 884-7411.

RIMS, 16.5 from '85 Dodge 3/4-ton truck, fit Chev. or Ford, 8 bolt holes with nuts, hubcaps, \$80. Molina, 299-8718.

BAR STOOLS; rocking chair; various sizes aluminum windows; chrome w/glass accessories: end tables, hanging planter, mirrors, lamps. Skogmo, 881-4526 or 292-9773.

CAMPER SHELL for LWB mini-pickup, white fiberglass, sliding front, side windows, measures 55" x 85" inside, 60" x 87-1/2" outside, \$200. Mooney, 281-2612.

ROTOTILLER, 5-hp., Sears, \$150. Byers, 298-8326.

REMINGTON, 7mm magnum, Bushnell 3X-9X scope, case, \$350; Remington 40XB .308, w/10X target scope, \$375. Bailey, 294-4218.

IBM TYPEWRITER, \$65; Allied 395 stereo receiver, \$40, TEAC 4010 R/R deck, \$75; Wharfedale W30D speakers, \$25/pair. Guilford, 255-6294.

3-FAMILY GARAGE SALE, April 11-12, 9 a.m. to 4 p.m., miscellaneous housewares, clothing, toys, furniture and more, 733 Landman Pl., NE. Bisbee, 293-0356.

KINGSIZE MATTRESS, \$30. Liston, 281-3283.

WATER HEATER; electric, 40-gal., needs new heating element, \$5. Hall, 298-8617.

NEW MOUSE for ITT Ixtra PC computer, never used, asking \$100. Brewster, 898-0144.

DESIGNER DRAPES, w/matching queen-sized bedspread, floral pattern on black, \$20. Dippold, 821-5750.

HAMMOND 8200 Aurora organ, blue book value \$2731, sell \$1900; other furnishings available. Bauer, 291-8736.

OVAL DINING TABLE, 6 cane-back chairs, pecan, \$300; matching server, \$75; soft-green carpet w/pad, 60 sq. yds., \$3.50/sq. yd. Bliss, 296-3752.

BOOKS: Spanish, beginning through advanced, 20 vols., \$30; *Scientific American*, '70-'83, 52 issues, \$20. Roberts, 293-3107.

TERMINAL, DEC VT-102 VDT, orig. box & books, \$300 OBO, \$370 w/modem; waterbed, complete outfit, \$50. Wood, 275-0094.

RING, .59-carat E-VS, round diamond solitaire. Craft, 821-1369.

'77 KUMFORT TRAVEL TRAILER, 21-1/2', tandem axle, asking \$4400. Burchett, 299-1689.

STROBE FLASH units for photography: Mecablitz, Sun-Pak, Honeywell Strobolar w/remote controller; also 3X telextender lens w/Pentax thread mount, \$35. Hughes, 299-6674.

WATERBED, king-size, bookcase headboard, 12 drawers, 2 sets sheets, 1 comforter. Padilla, 296-5048 after 5.

**TRANSPORTATION**

'72 CHEV. Suburban, 4WD, 350 V8, AT, PS, PB, AM/FM cassette, regular gas, \$1500. Hawkinson, 281-1281.

'68 FORD F250 heavy duty LWB, 360, V8, 4-spd., new paint, interior, brakes, \$1050. Schaub, 821-7242.

'80 TOYOTA Corona stn. wgn., PS, PB, air, cruise, \$3100; '82 Ford 250 conversion van, 41K miles, CB, PS, air, icebox, \$7950. Padilla, 842-6035 or 831-1358.

'79 CHEV. Monza, PS, V6, AC, sunroof, hatchback, rear louvres, \$1000. Crawford, 883-5545.

'71 CAMARO, new paint, tires, rims. Holmes, 292-0898.

'78 DATSUN, 510 stn. wgn., \$1250. Moore, 294-5646.

'84 CHEV. conversion van, rear air, rear heat, loaded, 8.2K miles, \$14,650. Grosbier, 881-1958.

'73 PLYMOUTH Valiant, 4-dr., AC, PS, PB, radio, \$750 OBO; '69 Plymouth Satellite, AC, PS, radio, 2-dr., \$750 OBO. Jones, 298-2067.

'71 TOYOTA Corona, 4-dr., rebuilt engine, \$1300. Walker, 281-9587 after 7 weekdays.

'79 MONZA notchback, 4-spd., 4-cyl., radials, \$1400. Pletta, 831-2926.

'79 CORVETTE, AT, PS, PB, AC, glass T-tops, louvres, low miles, \$9200 OBO. Simmons, 292-5201.

'81 CADILLAC Fleetwood Brougham, \$300 below book. Philbin, 292-1352.

'82 CAMARO Berlinetta, 305, V8, loaded, T-top, \$8100. Bailey, 898-3657.

'82 KAWASAKI GPZ 750, \$1750 OBO. Geurg, 266-3203.

'31 MODEL A, rumble seat sport coupe, \$9500. Campbell, 299-9195.

'71 FORD LTD, \$850 OBO. Romero, 299-5604.

'83 KAWASAKI KE-100 motorcycle, helmet, battery charger, two service manuals, low mileage, \$525 complete. Turman, 298-3460.

'65 VOLVO P1800, \$500. Edmunds, 293-3503.

'70 FORD Torino Cobra, white w/black interior, 429, 4-spd., PB, PS, air, bucket seats, \$3000. Lis, 822-1189.

'76 MUSTANG II, 58K original miles, 4-cyl., 2.3 liter, AT, AC, \$1600. White, 884-8315.

'80 VW Vanagon, 7-pass., AC, AM/FM cassette, 4-spd., 58K miles, short block replaced 50K miles. Douglas, 243-7176.

'40 BUICK Special, \$2800 OBO. Chavez, 831-9591.

'79 FORD F100 LWB w/shell, 3-spd., new brakes, shocks, tires, 64K miles, \$3000. Erwin, 836-2746.

'72 CHEV. 1/2-ton truck, new engine and paint, \$3700 OBO. Hunter, 865-5745.

'81 YAMAHA 185 "Exciter" street bike, ridden one season, 900 miles, \$600. Murray, 296-2479.

'83 YAMAHA IT175, purchased new 5/85, low miles. Zarick, 836-5703 after 5.

'74 CORVETTE Stingray, L-82/350 V8, regular gas, PS, PB, PW, T-tops, mag wheels, asking \$7500. Gentry, 298-3574.

'83 HONDA XL-600R, dirt & street, extras, \$1375. McConnell, 268-3109.

'80 HONDA XR500 motorcycle, \$600 OBO. Kolb, 294-5860.

'76 VW Rabbit, new Michelin radials, \$1200. Wampler, 299-4910.

'81 HONDA CB750 motorcycle, \$1400. Wright, 296-3850.

'75 BRONCO, 3-spd., V8, PS, low mileage, extras, \$4100 OBO. Cook, 869-6921.

'78 MAZDA GLC hatchback, 4-spd, 4-cyl., AC, 73K miles, \$800 OBO. Detry, 821-9437.

'77 MGB Roadster, wire wheels, high-performance carburetor, hardtop & convertible top, new clutch, 75K miles, \$3200. Mitchell, 298-1267.

'78 HONDA GL1000 w/Equalean side car, air, shocks, AM/FM, 8-track stereo, CB radio, extras, \$3500. Johnston, 294-4574.

'73 MERCEDES 220 diesel, 4-dr., 4-spd., AC, full service record, \$6500. Novotny, 296-7167.

'78 HONDA Hobbitt PA50, moped, 800 miles, \$200 OBO. Hurd, 294-2509.

'78 TOYOTA Corolla stn. wgn., 5-spd., 4-dr., new interior, steel radials, \$1900. Ricker, 293-1847.

HONDA CM 450, low miles, w/helmet, \$600 OBO. Eckley, 294-7650 after 5.

BOAT, '80 "Baja" tri-hull, 16' overhead canopy, 115-hp Evenrude w/power tilt and trim, silver blue metallic. Hole, 293-4653.

KAYAK, skirt, helmet, two float bags, paddle, adjustable foot plates, good for beginner, \$150 firm. Garcia, 831-0395, leave message.

AMF SUNFISH, one year old; 3 Tisa sailboards; trailer with rack, call for prices; Schwinn Varsity, \$40. Ginn, 883-0004.

DIRT BIKES: '83 Suzuki RM-80, \$400; '82 Suzuki RM-250, \$875; Bell Star LTD II, 7-3/8, Anthracite, \$80. Healer, 298-6967.

BMX BOY'S BIKE, 20", \$50. Hamilton, 881-3089 after 5.

'81 VW sport truck, 5-spd., fiberglass shell, AM/FM stereo, 37.5K miles, \$2950. Johnson, 296-1236.

'81 YAMAHA 650 Special II, \$600 OBO. Kolb, 281-1570.

'79 VW Scirocco, rebuilt engine, sunroof, AM/FM, cassette, new tires and struts, \$2500 OBO. Ulibarri, 877-8053.

'69 DODGE Dart, slant V6, \$300. Mincey, 892-0630.

'85 HONDA Elite 150, no down, take over payments \$63/month, includes F/C insurance, 17 months left. Garcia, 884-7411.

'83 VW Quantum stn. wgn., 5-cyl., fuel-injected, AT, PB, PS, GL pkg., \$8500 OBO. Sedillo, 242-4046.

'79 HONDA motorcycle, 750-cc, limited edition w/Vetters Windjammer, 11,25K miles, \$1000 OBO. Stinebaugh, 869-2270.

'71 VW bug, new tires, shocks, \$1250; '67 International Scout 4X4, 4-cyl., 4-spd., new M/S tires, shocks, \$1050. Baynes, 281-1554.

'84 CHEV. Silverado, "heavy-half" pickup, 15K miles, V8, AT, class 2 trailer hitch, bedliner, extras, \$8000. Lancaster, 345-0166.

'76 MINI MOTOR HOME, 400-V8, 1-ton chassis, cruise, AC, dual wheels, \$8500 firm. Garcia, 293-3937.

'85 MAZDA GLC luxury HB, 9K miles, 5-spd., AC, AM/FM/tape, alloy wheels, more, 30+ mpg, \$6900. Webb, 294-8375.

'81 SUZUKI GS-250, 4K miles, windshield, luggage rack, backrest, new mufflers, \$700. Ruby, 884-9318.

'82 BERLINETTA Camaro, V6, power everything, AM/FM cassette, cruise, AC, new tires, wheels and brakes, \$7300 OBO. Weber, 268-0344.

'71 MGB, stereo, Tonneau, 12K miles on total body/engine/chassis restoration, make offer. Young, 294-6228.

'74 CHEV. 3/4-ton w/camper, self-contained, 4-spd., 350 V8, dual tanks, jacks, extendable bumper. Villane, 298-5158 or 265-4961.

'73 PONTIAC LeMans, 350, AT, PS, PB, AM/FM cassette, 128K miles. Graving, 865-5581.

'81 HUSKY 430XC dirt bike, never raced, \$775. Turner, 293-8938.

'78 BUICK Regal LTD, 305 V8, AT, AC, PS, PB, AM/FM stereo, asking \$1950. Burchett, 299-1689.

'80 HONDA Twinstar, 200cc, 13K miles, \$495. Johnson, 298-4553.

'77 DATSUN B210, \$1300; headers, exhaust manifold and carburetor for AMC 258, 6-cyl., \$75. Hubbard, 842-9431.

YAMAHA 550 Maxim w/Rooster fairing, 10.7K miles, \$1000. Miller, 296-4531 after 6.

'79 FORD T-BIRD, 302, V8, 59K miles, \$2200 OBO. Pratt, 881-4469.

'77 OLDS Delta 88 4dr sedan, fully equipped, well-maintained, asking \$1350. Brewster, 898-0144.

'85 1/2 ESCORT L, tu-tone blue, 9000 miles, 5-speed, AM/FM cassette, louvres, \$5400. Perea, 873-2515.

**REAL ESTATE**

4-BDR., 1-3/4-bath, Loma Del Norte, 1764-sq.-ft., corner lot, backyard access, sunroom, deck, 7529 St. Clair NE, \$87,500. Shannon, 821-6017.

3-BDR., 1-3/4-bath, FP, single garage, Candelaria/Carlisle area, large yard, \$75,000. Mareda, 883-8824.

NE HEIGHTS HOME, over-sized family room & master bedroom, extras, 1860 sq. ft., sun room. Marrs, 822-0367.

PAGOSA SPRINGS mountain home on 5 acres, 1100 sq. ft., on county road, part of Fairfield, \$85,000. Mares, 884-4843.

14 x 70 TRAILWAY mobile home, 3-bdr., 2-bath, attached porch, located on west side, \$12,000. Erwin, 836-2746.

NEAR BASE, 2-bdr. home, 1-3/4-bath, 1445 sq. ft., security bars, shed, cable-wired den, 1029 Georgia SE, \$67,500. Puccini, 255-3700 or 255-0568.

CEDAR CREST, '83 14 x 64 mobile home, 2-bdr., 1-1/2-bath, setup in adult section, \$19,500 OBO. Helling, 281-5536 or 345-0678 after 5.

3-BDR. ROBERSON HOME near Eubank/Comanche, 1770 sq. ft., remodeled kitchen, hardwood floors, landscaped, formal DR, \$89,900. Roberts, 293-9023.

BUILDING LOT, fully improved, ready to build on, view, Tucson, AZ. Robb, 821-2999.

HANDYMAN SPECIAL, Diva Brooks mobile home, 12 x 50, partially remodeled, materials included for future remodeling, price discussed. Brockway, 247-9460.

3-BDR. HOUSE, Snowheights near Juan Tabo, remodeled kitchen and master bath, owner willing to work with "qualifiable" buyer. Gomez, 293-8377.

WOODED 1.2-ACRE HOMESITE off S14, excellent roads, electricity and phone available, \$8900. Willis, 281-2340.

1.71 ACRES in Moriarty on Hwy. 66 and Hwy. 41, zoned commercial, \$45,000 cash. Liston, 281-3283.

LOS LUNAS, passive solar adobe, 2350 sq. ft., open floor plan, 3-bdr., 1-3/4-bath, 2 kiva fireplaces, beamed ceilings. Graving, 865-5581.

SE HEIGHTS, brick, near Base/UNM, 2-bdr., 1-bath, fireplace, hardwood floors, garage, \$58,000. Swain, 256-1467 or 265-0098 (message).

SE 3-BDR., 1-bath, 1100 sq. ft., convenient location, refinance, \$53,000. Hubbard, 842-9431.

1800-SQ.-FT. HOUSE, 3-bdr., 1-3/4-bath, fruit trees, Holiday Park area, low \$80s. Rexroth, 293-6025.

ACADEMY HILLS, 4-bdr., den, sunken LR, formal DR, 2300 sq. ft., 9-1/4 assumable, save \$5K at \$135K. Furaus, 822-0146 Sunday.

**WANTED**

BABYSITTING, weekends, summer, by responsible 13-year-old; also, persons interested in forming Amiga users group on Base. Olson, 898-8909.

BICYCLE, woman's, 3-spd. or single-speed, good shape, good price. Schubeck, 821-3133.

SMALL YARD WHEELBARROW; small push lawnmower; small (2-load) collapsible clothesline umbrella; pastel art prints. Hovorka, 299-0224.

BIKE, 3-wheel, 3-spd. Rainhart, 821-3690.

OCCUPANT for one-bdr. apartment, will pay \$200 to take over 6-month lease, has many amenities. Snyder, 294-9538.

TRAVEL TRAILER, self-contained; bicycle built for two. Blea, 256-9235 after 6.

FLUKE 5200A, bought March 7 at Sandia surplus sale, finder's fee. Fuge, 265-0769.

SLIDE PROTECTORS, 2-1/4 x 2-1/4 and stereo. Mattox, 292-7763.

SMALL AIR COMPRESSOR suitable for powering an air brush. Strip, 292-7490.

FILE CABINET, 4-drawer. Shunny, 265-1620.

SOMEONE MOVING HERE from Michigan, will share expenses/driving in exchange for moving my piano here. Connor, 293-2952.

RADIO CONTROL PLANE ENGINES, any size, also planes, controls, servos and all other accessories. Kureczko, 298-1577.

'78-'80 MID-SIZED car in good condition. Stoever, 296-3717.

SECRETARY DESK, excellent condition, preferably cherry. DeLaurentis, 293-3778.

CAR COVER, approx. 17-19' long, reasonable condition, reasonable price; 10-spd. bike, must be in good condition, \$50 price range. Everts, 299-1664.

HOUSESITTING, no charge, June, July, young married couple w/no children/pets, will care for pets. McBride, 299-4347.

**LOST AND FOUND**

LOST: red plastic coin pouch containing watch. Mayer, 294-3368.



## The Month's Biggie: Casino Night!

OK, YOU CLOSET GAMBLERS, here's your chance to show that razzle-dazzle at the gaming tables! Saturday night, April 19, the C-Club pulls out all the stops when it's transformed into little Las Vegas on the Rio Grande. Doors open at 6 p.m. with cocktails and food service; low, low prices on green chile stew, French dip sandwiches, hot dogs, hamburgers, etc., etc. You trade \$2 admission for a bundle of play money and door prize tickets, and the really big casino action starts at 7. The Thunderbirds have lined up about 100 volunteers who'll try to take your funny money away. (If any of those T-Bird card sharks are dealing at the blackjack tables, you don't have a chance!) Besides blackjack, there's chuck-a-luck, wheel of fortune, and craps for all you wheeler dealers. The Bear Canyon Band (a.k.a. Arroyo del Oso) will keep you hopping from table to table from 8-12.

THOSE THURSDAY NIGHT SPECIALS are running full speed ahead, with all-you-can-eat low cost buffets and terrific music by Soundwave. Next week on April 17 it's BBQ ribs and chicken for \$4.95. Then on April 24, it'll be Italian food — a super bargain at \$3.95. Kids 12 and under eat at half price; guests welcome too.

IT'S PRIME RIB OR SCALLOPS tonight on the two-for-one dinner special served from 6-9. You get two dinners — your choice of entrees — for a measly \$14.95, with musical entertainment afterwards by the Bob Weiler Band. Next Friday you can choose between filet mignon or swordfish for dinner and stomp around later to the ever-popular country/western tunes of the good old Isleta Poor Boys.

IF THEY KNEW YOU WERE COMING, they'd have baked a cake — or something. Give yourself a break and avoid disappointment by calling the Club office for reservations (265-6791) any time you're planning to eat dinner there. Thursday night specials, two-for-ones, whatever — let 'em know (at least several days in advance) you're going to be there. That way, nobody goes away hungry!

A TOUCH OF CLASS will definitely be in evidence when the C-Club inaugurates its quarterly Artist's Series on Sunday, April 20. The first one features a piano concert and dinner — what a nice way to spend a lovely springtime Sunday evening! The buffet dinner from 5-7 p.m. features baron of beef or stuffed cod fillets, salad bar, and assorted desserts. Local pianist Stephen Montoya's classical concert begins at 7. Dinner cost is \$5.95, and the concert is free. All Sandians and DOEans are invited. Call right now to reserve your space.

AFTER HAVING RECOVERED from Casino Night on the 19th, the T-Bird card sharks will be back in action the following Monday, April 21. The prime time shuffle starts at 10 a.m.; die-hard dealers stick around until 3:30 or so. It's a good thing these folks are retired — they don't have time for work, that's for sure! If you haven't tried the card group yet, you'd better make the scene this time — the regulars are always looking for new victims. Maybe you can turn the tables on 'em!

ON THE ROAD AGAIN — That's where the Thunderbird Roadrunner RV crew plans to be April 22-24. This gang really gets around; this time it's Bullhead City, Nev. (outside of Laughlin). More info from wagonmasters Duane Laymon, 822-1749; Tom Brooks, 344-5855; or Bill Minser, 299-1364.

SPEAKING OF THUNDERBIRDS, all you birds out there should mark your calendars right now for the big quarterly dinner dance set for Sunday, April 27. Dinner from 5-7 p.m. for \$5.95 features baron of beef or stuffed cod fillets and lots of goodies for dessert. The Bob Banks Trio provides music for your dancing and listening enjoyment from 6-10. Make your reservations with the C-Club office; remember — you only have a shot at this event four times a year!

WANTED: WOLVES for the annual Coronado Wolfpack membership party on April 29, says Wolfpack honcho Ken Deller. The action starts at 7 p.m. in the Eldorado room. Come out and meet this bunch of Lobo enthusiasts, and enjoy snacks, beer, wine, and soft drinks at the same time. It's your chance to get in on the pack's plans for the coming year.

GET IN THE SWIM this summer at the C-Club. Pool and patio passes are on sale at the Recreation Office. With pool pass in hand, you can sign up for swimming lessons on May 3 from 9 a.m.-noon in the ballroom.

TRAVEL — There's something for everybody in the terrific menu of trips the C-Club Travel Committee is serving up this year. Some deals you shouldn't pass up:

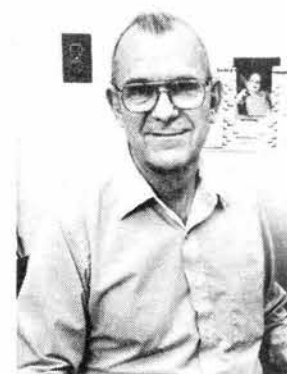
*Rafting on the Colorado River* — If white water rafting thrills are your bag, this is the one for you. You'll spend three days rafting through Cataract Canyon, shooting rapids along the way like Big Drops, Little Niagara, and Satan's Gut. Thrills, chills, and no spills, right? This trip, set for July 2-6, costs \$483/person and includes round trip bus transportation, three days and two nights of rafting, all meals while rafting, two nights accommodations in Moab (at beginning and end of trip), and a charter flight back to Moab from Lake Powell after the rafting expedition.

*Southern Colorado* — A trip to Mesa Verde and Durango is scheduled July 11-13. You're on the road for three days and two nights. Along the way there's a visit to Mesa Verde and its cliff dwellings, and a narrow gauge railway trip to Silverton from Durango through all that splendid scenery. Take a ride on the Alpine Slide and enjoy a scrumptious chuckwagon dinner in Durango. Accommodations in Big D (Durango, that is) include breakfast and a cocktail party. Can't beat the deal — it's only \$176/person. You can make reservations for this one and all other C-Club trips by calling the Club office, 265-6791.

*Canadian Rockies & Pacific Northwest* — This one could very well be the absolute apex of your touring experiences! It's a combination of cruises on lakes and inland waterways; visits to beautiful gardens (Butchart Gardens outside of Victoria and Minter Gardens, also in Canada); one day at EXPO 86 in Vancouver; tramway rides (Hell's Gate and Jasper); a night at the elegant Empress Hotel in Victoria; stops at Banff and Jasper; dinner atop Seattle's Space Needle... we could go on and on, but you get the picture! Hold on to your hat — the tab for all this fun (Aug. 14-24) is only \$948/person. The low, low price includes round trip air fare to Seattle, 10 nights lodging, all admissions, charter bus for entire trip, fees for boats and ferries, some meals (including three gala dinners, and lunch during a cruise of the San Juan Islands), and much, much more. Lots of folks will be lining up this trip to end all trips, so hurry on those reservations; payment in full by July 10.

*Fall Trips* — Dates have been set for three October getaways: Laughlin (Nev.)/Lake Havasu City, Oct. 13-16; the Ozarks, Oct. 19-25; and Canyon de Chelly, Oct. 25-26.

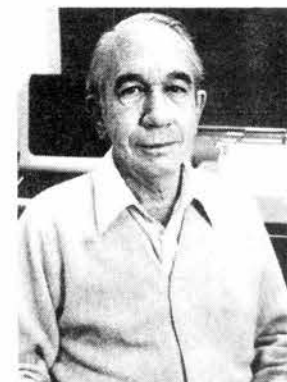
## Retiring



Alfred Hoge (2541)  
37 yrs.



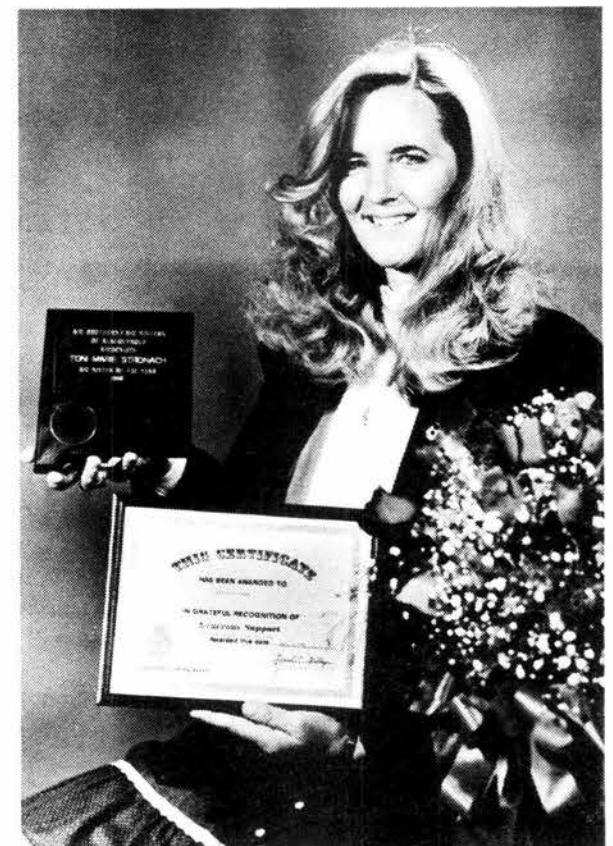
Walter Howerton (7545)  
36 yrs.



Harold Vaughn (1631)  
34 yrs.



Arthur Clark (7210)  
34 yrs.



TONIMARIE STRONACH (3160A) learned recently that she's been named "Big Sister of the Year" for Region 10, which covers a four-state area (New Mexico, Colorado, Oklahoma, and Texas). She had earlier been named 1986 local "Big Sister of the Year" by the Albuquerque agency of Big Brothers/Big Sisters (see LAB NEWS, Jan. 17, 1986). "Regional competition was rough," reports Tonimarie. "There are 40 agencies in Region 10, and each one had a local winner who was vying for regional honors." She now competes with 11 other regional winners for the national Big Sister award, to be given later this year at the National BB/BS of America conference in Florida. Tonimarie is shown here with the local award plaque she received April 1, a certificate of recognition for her BB/BS auxiliary work on social and educational programs for kids in the program, and roses — her thank you from BB/BS for editing the organization's newsletter and directing a videotape that will introduce its program to prospective adult volunteers.